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Contact: Mark Breederland, (231) 922-4628

Type-E Botulism Confirmed in Waterfowl Deaths

Type E botulism has again been confirmed in the deaths of many fish-eating waterfowl and diving ducks that continue to wash ashore along the beaches of northern Lake Michigan.

Common loons, red-necked grebes, and long-tailed ducks are among the species affected. These waterfowl migrate through the region every year, says Michigan Sea Grant Extension Educator Mark Breederland, who is based in Traverse City, Michigan.

“Northern Lake Michigan is an important rest stop for migrating waterfowl flying south from Canada,” says Breederland. “Unfortunately many are not getting through to their wintering grounds because they’re ingesting the botulism toxin. Depending on the weather, we may continue to see die-offs into December.”

In the Great Lakes, botulism spores (the resting stage of the bacteria) are native to the upland soils and aquatic sediments of many lakes. Under certain anaerobic (low oxygen) environmental conditions, the spores germinate and begin vegetative growth of the toxin-producing bacterial cells.

Breederland says that avian mortalities due to type E botulism are likely tied to invasive species. It appears that quagga and zebra mussels filter out the botulism toxin from nearby mats of decaying Cladophora algae and then they're consumed by fish such as the invasive and highly abundant round goby. The infected gobies, which become paralyzed by the toxin, are then easy prey for flocks of migrating, fish-eating waterbirds. According to National Park Service dive crews collecting lake bottom samples and other research this summer, the density of round gobies was estimated at 10 fish per square meter in Lake Michigan on the large rocky shoal off of the mouth of the Platte River, in Benzie County. That would equate to hundreds of thousands and possibly millions of gobies just on that one rocky shoal.

Last year’s type E botulism event, the first significant one on Lake Michigan since 1983, claimed nearly 2,900 waterbirds and was geographically limited to a small stretch of shoreline in Benzie and Leelanau counties within the Sleeping Bear Dunes National Lakeshore. This year’s impacts are being felt over many coastal counties of Northern Lake Michigan from the Ludington area up the coastline to Wilderness State Park and many of the counties in the U.P. that have Lake Michigan shoreline.

In Michigan's Upper Peninsula, the Michigan Department of Natural Resources (MDNR) has confirmed Type E Botulism in the following species: common loon, long-tailed duck, and horned grebe (Schoolcraft County); red-necked grebe, long-tailed duck *(probable)*, common loon, white-winged scoter, and herring gull (Mackinac County); common loon, herring gull (*probable*), and red-necked grebe (*probable*) (Delta County).

In Michigan's Lower Peninsula, the MDNR has confirmed type E Botulism in the following species: horned grebe, red-necked grebe, ring-billed gull, herring gull (Benzie and Leelanau Counties, Sleeping Bear Dunes National Lakeshore), and bald eagle (Benzie County-Rush Lake); red-necked grebe, white-winged scoter, common loon, and long-tailed duck (Emmet County, Cross Village); red-necked grebe (Emmet County, Wilderness State Park); common loon (Charlevoix County); and horned grebe, long-tailed duck, and common loon (*probable*) (Antrim County). The National Wildlife Health Center in Madison, WI also confirmed that 4 endangered piping plovers died from botulism within Sleeping Bear Dunes in July of 2007.

The MDNR conducts disease testing and maintains records of avian species and number affected by type E botulism. To submit an on-line observation report of sick or dead birds (please one report for each species of waterbird), see:
http://www.michigandnr.com/diseasedwildlifereporting/disease_obsreport.asp

or email species, date, location (County in particular), and count information to:

cooleytm@michigan.gov
Dr. Thomas M. Cooley, Wildlife Biologist
Michigan Department of Natural Resources
Wildlife Disease Lab, Lansing, Michigan

For more about botulism, see:

Botulism: Frequently Asked Questions
www.miseagrant.umich.edu/habitat/avian-botulism-faq.html

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